IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Francis Yu-Hei Tsang et al. Title: NUCLEAR VOLTAIC CELL Docket No.: 2408.001US1 Serial No.: 10/720,035 Filed: November 21, 2003 Examiner: Unknown Group Art Unit: 3663 Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 We are transmitting herewith the following attached items (as indicated with an "X"): <u>X</u> Communication Concerning Related Applications (1 pg.). Information Disclosure Statement (2 pgs.), Form 1449 (4 pgs.), and copies of 53 cited documents. Please charge any additional fees or credit overpayment to Deposit Account No. 19-0743. SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. Customer Number 21186 Atty: Steven R. Gilliam Reg. No. 51,734 CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to:Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this | day of January, 2007.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

(GENERAL)

Signature

<u>S/N 10/720,035</u> <u>PATE</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Francis Y. Tsang et al.

Examiner: Unknown

Serial No.:

10/720,035

Group Art Unit: 3663

Filed:

November 21, 2003

Docket: 2408.001US1

Title:

NUCLEAR VOLTAIC CELL

COMMUNICATION CONCERNING RELATED APPLICATIONS

Mail Stop Amendment

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Applicants would like to bring to the Examiner's attention the following related applications in the above-identified patent application:

| Serial/Patent No. 11/214,079 | Filing Date/Issue Date August 29, 2005 | Attorney Docket 2408.001US2 | <u>Title</u> NUCLEAR VOLTAIC CELL |
|---------------------------------|--|--------------------------------|--------------------------------------|
| 11/214,078 | August 29, 2005 | 2408.001US3 | NUCLEAR VOLTAIC CELL |
| 11/214,280 | August 29, 2005 | 2408.001US4 | NUCLEAR VOLTAIC CELL |

Continuations and divisionals may be later filed on the cases listed above, or cited to the Examiner in any previous Communication Concerning Related Applications. Applicants request that the Examiner review all continuations and divisionals of the above-listed or previously-cited patent applications before allowing the claims of the present patent application.

Respectfully submitted, FRANCIS Y. TSANG ET AL.

By Applicants' Representatives, SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. Box 2938 Minneapolis, MN 55402

512.492.6406

Date 11-Jan-2007

Steven R. Gilliam

Reg. No. 51,734

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Name

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Examiner:

Unknown

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10/720,035

Group Art Unit:

3663

Filed:

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Docket:

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Title:

NUCLEAR VOLTAIC CELL

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 et. seq., the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 19-0743 in order to have this Information Disclosure Statement considered.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications, and Non-Published Applications identifiable by USPTO Serial Number, are no longer required to be provided to the Office. Notification of this change to this effect was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004 and October 19, 2004. Thus, Applicant has not included copies of any US Patents or US Patent Applications identifiable by serial number that may be cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted, FRANCIS YU-HEI TSANG ET AL.

By their Representatives, SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. Box 2938 Minneapolis, MN 55402 512.492.6406

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day of <u>January</u> 2007.

Steven K. Gui

Signature

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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | Application Number | 10/720,035 | |
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| | First Named Inventor | Tsang, Francis | |
| | Group Art Unit | 3663 | |
| | Examiner Name | Unknown | |
| Sheet 1 of 4 | Attorney Docket No: 2 | 2408.001US1 | |

| US PATENT DOCUMENTS | | | | | |
|---------------------|---------------------|---------------------|---|-------------------------------|--|
| Examiner Initial * | USP Document Number | Publication Date | Name of Patentee or Applicant of cited Document | Filing Date If Appropriate | |
| | US-4,212,179 | 07/15/1980 | Juergens, Tristan D. | 10/12/1978 | |
| | US-4,259,419 | 03/31/1981 | Uba, Toshio, et al. | 08/17/1979 | |
| | US-4,493,221 | 01/15/1985 | Stieg, Richard f., et al. | 01/12/1983 | |
| | US-4,521,498 | 06/04/1985 | Juergens, Tristan | 07/22/1982 | |
| | US-4,592,972 | 06/03/1986 | Juergens, Tristan, et al. | 07/22/1983 | |
| | US-4,606,982 | 08/19/1986 | Nelson, Robert F., et al. | 05/09/1985 | |
| | US-5,045,086 | 09/03/1991 | Juergens, Tristan | 09/27/1989 | |
| | US-5,047,300 | 09/10/1991 | Juergens, Tristan | 06/14/1989 | |
| | US-5,198,313 | 03/30/1993 | Juergens, Tristan | 09/10/1991 | |
| | US-5,677,078 | 10/14/1997 | Juergens, Tristan, et al. | 09/27/1995 | |
| | US-5,895,728 | 04/20/1999 | Walker, Thomas P., et al. | 01/15/1997 | |
| | US-6,004,689 | 12/21/1999 | Walker, Thomas P., et al. | 12/07/1998 | |

| | 07 | THER DOCUMENTS NON PATENT LITERATURE DOCUMENTS | |
|-----------------------|--------------|---|----|
| Examiner Initials* | Cite No 1 | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T² |
| | | "4-pocket Electron Bean Evaporator", e-flux4, tec tra, 5 Pages | |
| | | "Annealing (Metallurgy)", Wikipedia, | |
| | | http://en.wikipedia.org/wiki/Annealing %28metallurgy%29, 1 Page | |
| | | "Carbon Coaters, Sputter Coaters and Turbo Sputter Coaters", Electron | |
| | | Microscopy Scienes, | |
| | | http://www.emsdiasum.com/microscopy/products/equipment/carbon_coaters.aspx, |] |
| | | 8 Pages | |
| | | "E-beam Evaporator", Brigham Young University, Department of Electrical & | |
| | | Computer Engineering, http://www.ee.byu.edu/cleanroom/ebeam.phtml, (Observed | |
| | | 11/7/06), 2 Pages | |
| | | "E-beam Evaporators", Oxford Scientific, | |
| | | http://www.oxsci.com/pages/products/evaporators/index.htm, (Obersved 11/7/06), 5 | |
| | | Pages | |
| | | "Laboratory Sputter Coating Equipment", Thin Film Coating, Deposition & | |
| | | Sputtering Equipment, http://www.emitech.co.uk/sputtering-coating.htm, 3 Pages | |
| • • | | "Rototherm - Thin Flim Evaporator", Artisan Industries, Inc., | |
| | | http://www.artisanind.com/chemical/rototherm.htm, (Observed 11/7/06), 2 Pages | |
| | | "Sputter Coating Technical Brief", Quorum Technologies, Polaron, Issue 1, | |
| | | Document No. TB-Sputter, 13 Pages | |
| | | "Sputter-Coater high vaccuum coating system for thin flim deposition", | |
| | | http://www.tectra.de/spuco.htm, (Observed 11/7/06), 5 Pages | |
| | | ALLGAIER, R. S., "Interpretation of transport Measurements in Electronically | |
| | | Conducting Liquids", Physical Review, Vol. 185, No. 1, (September 5, 1969), 227- | |
| i | | 244 | |

PTC/SB/08A(10-01)
Approved for use through 10/31/2002. OMB 651-0/31
US Patent & Trademerk Office: US DEPARTMENT OF COMMERCE

| Substitute for form 1449A/PTO | Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless if contains a valid OMB control number Complete if Known | | |
|---|---|-------------------|--|
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| (Use as many sheets as necessary) | Filing Date | November 21, 2003 | |
| | First Named Inventor | Tsang, Francis | |
| | Group Art Unit | 3663 | |
| | Examiner Name | Unknown | |
| Sheet 2 of 4 | Attorney Docket No: 2 | 2408.001US1 | |

| | 01 | THER DOCUMENTS NON PATENT LITERATURE DOCUMENTS | |
|-----------------------|--------------|---|----------------|
| Examiner Initials* | Cite No 1 | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| | | BRILLSON, LEONARD J., "Contacts to Semiconductors", Contacts to | |
| | | Semiconductors, Fundamentals and Technology, Xerox Corporation, Noves | |
| | | Publications, New Jersey, (1993) | |
| | | BULLOCK, ALAN, et al., "The Harper Dictionary of Modern Thought,", The Harper | |
| | | Dictionary of Modern Thought, Harper & Row, New York, (1977),Page 25 | |
| | | CONSIDINE, GLENN D., <u>Encyclopedia of Chemistry, Fifth Edition, Van Nostrand's</u> , | |
| | | John Wiley & Sons, Inc., (2005) | |
| | | CUTLER, MELVIN, "Experimental Methods", Chapter 4, Liquid Semiconductors, | |
| | | Academic Press Inc., (1977), 7 Pages | |
| | | | |
| | | FARRELL, MARTIN V., et al., "Coupling of Buoyant Convections in Boron Oxide | |
| , | | and a Molten Semiconductor in a Ventical Magnetic Field", <u>Journal of Heat Transfer</u> , | |
| | | Vol. 124, (August 2002), 643-649 | |
| | | GEARHART, STEVEN S., et al., "A Monolithic 250 GHz Schottky-Diode Receiver", | |
| | | IEEE Transactions on Microwave Theory and Techniques, Vol. 42, No. 12, | |
| | - | (December 1994), 2504-2511 GHOSH, P. K., et al., "Electronic transport in Liquid and solid sulphur", <u>J. Phys. C</u> | |
| | | (Proc. Phys. Soc.), Series 2, Vol. 1, (1968), 1347-1358 | |
| | | GLAZOV, VASILII M., et al., "Liquid Semiconductors", Liquid Semiconductors, | |
| | | Plenum Press, New York, (1969), | |
| | | GOBRECHT, H., et al., "Electrical properties of liquid selenium up to 1300K", J. | |
| [[| | Phys. C: Soild St. Phys., Vol. 4, (1971), 2247-2253 | |
| | | GRAY, H. J., et al., "A New Dictionary of Physics", A New Dictionary of Physics, | |
| | | Second Edition, Longman London, (1975), Page 23 | |
| | | GREACEN, CHRIS, "How Photovoltaics Cells Work", Photovoltaics, Home Power # | |
| | | 23, (June -July 1991), 37-39 | |
| | | GREENWOOD, N. N., et al., "Chemistry of the Elements", Chemistry of the | |
| | | Elements, Pergamon Press, New York, (1984), Page 1121 | |
| | , | HARRELL, WILLIAM R., "Aluminum schottky contacts to n-type 4H-SiC", Look | |
| ! | | Smart, http://findarticles.com/p/articles/mi_ga3776/is_200210/ai_n9137011, | |
| | | (October 2002), 4 pages | |
| | | HARTKE, J. L., et al., "Electronic States in Vitreous Selenium", Physical Review, | |
| | | <u>Vol. 139, No. 3A, (8/2/1965), A970-A980</u> | |
| | 1 | HOSOKAWA, SHINYA, et al., "Electronic Properties of Liquid Selenium Containing | |
| | | Alkali and Halogen Impurities", <u>Journal of the Physical Society of Japan, Vol. 54</u> , | |
| ļ | | No. 12, (December 1985), 4717-4725 | |
| | | IOFFE, A. F., et al., "Non-Crystalline, Amorphous, and Liquid Electronic Semiconductors", Progress in Semiconductors, Vol. 4, (1960), 239-291 | |
| | | JAMALI, BEHNAM, et al., "Design and optimisation of Schottky diodes in CMOS | |
| | | technology with application to passive RFID systems", School of Electrical and | ĺ |
| | | Electronics Engineering, University of Adelaide, S.A. 5005, Australlia, 9 Pages | |
| LL | | LICONOTINOS ETIGINOCINING, OTHER STRY OF AGENCIACE, C.A. 0000, Additional, 9 Fages | |

PTO/SB/08A(10-01)
Approved for use through 10/31/2002, OMB 651-0031
US Patent & Trademark Office: U.S. DEPARTMENT OF COMMERCE

| Substitute for form 1449A/PTO | Complete if Known | required to respond to a collection of information unless it contains a valid CIMB control humber |
|---|-----------------------|---|
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| | 0 | THER DOCUMENTS NON PATENT LITERATURE DOCUMENTS | |
|-----------------------|--------------|---|------|
| Examiner Initials* | Cite No 1 | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T² |
| | | KNOLL, GLENN F., "Radiation Detection and Measurement", Radiation Detection | |
| | | and Measurement, Third Edition, John Wiley & Sons, Inc., New York, (2000) | |
| | | KOSLOWSKI, THORSTEN, et al., "Modified small-world networks as models of | |
| | | liquid and amorphous selenium", Physical Review B, Vol. 66 (064205), (2002), 7 | |
| | | Pages | |
| | | KRESSE, G., et al., "Defects in liquid selenium", Physical Review B, Vol. 59, No. 5, | |
| | | (1998), 3501-3513 | |
| 1 | | LEE, CHING-TING, "Performance characterization of InGaP Schottky contact with | |
| | | ITO transparent electrodes", Look Smart, | |
| | | http://www.findarticles.com/p/articles/mi_ga3776/is_199809/ai_n8812313, | |
| | | (September 1998), 5 Pages | |
| | | LI, QIANG, et al., "Fabrication and Modeling of Schottky Diode: Integrated in | |
| | | standard CMOS process", State Key Lab of ASIC & System, Fudan University, | |
| , | | Shang Hai 200433, 8 Pages | |
| | | LI, MEICHENG, et al., "The Dependence of Electrical Characterization on Interface | |
| | | Structure of PtSi/strained-Si1-x-Gex/Si Schottky Diodes", Advanced Nanomaterials | |
| | | and Nanodevices, Eight International conference on electonic materials, China, | |
| | | (June 2002), 278-289 | |
| | | MERRETT, J. N., "Fabrication of self-aligned graded junction termination | |
| | | extensions with applications to 4H-SiC P-N diodes", Look Smart, | |
| | | http://www.findartilcles.com/p/articles/mi_qa3776/is_200206ai_n9123173, (June | |
| | | 2002), 5 Pages | |
| | | MIZOBUCHI, YUZO, et al., "Photogeneration of Charge Carriers in a-sulfur", | |
| | | Journal of the Physical Society of Japan, Vol. 31, No. 1, (July 1971), 155-163 | |
| | | MONCH, W., "Semiconductor Surfaces and Interfaces", Semiconductor Surfaces | |
| | | and Interfaces, Third Edition, Springer, (2001) | |
| | | MOTT, N. F., et al., "States in the gap and recombination in amorphous | |
| | | semiconductors", Philosophical Magazine, Vol. 32, (1975), 961-996 | |
| | | PING, A. T., "Characterization of reactive ion etching-induced damage to n-GaN | |
| | | surfaces using Schottky diodes", Look Smart, | |
| i 1 | | http://www.findarticles.com/p/articles/mi_qa3776/is_199703/ai_n8756708, (May | |
| | | 1997), 5 Pages | |
| | | QUEHEILLALT, DOUGLAS T., et al., "Laser ultrasonic sensing of the melting and | |
| | | soildification of cadmium telluride", <u>Journal of Crystal Growth, Vol. 225,</u> (2001), 34- | |
| | | DATAKONDA D. NObreja sentrata farmatian of Ciliana Cabattly, Diadaa by Caraan | -, - |
| | | RATAKONDA, D., "Ohmic contacts formation of Silicon Schottky Diodes by Screen | |
| | | Printing and Rapid Isothermal Processing", Look Smart. | |
| | | http://www.findarticles.com/P/articles/mi_qa3776/is_199805/ai_n8797486, (May | |
| <u> </u> | - | 1998), 3 Pages | |
| | | REGEL, A. R., et al., "Thermal Conductivity of Salt, Metal and Semiconducting | |
| Ll | | Melts", Phys. stat. solidi, Vol. 5,, (1971), 13-57 | |

PTO/SB/08A(10-01)
Approved for use through 10/31/2002 OMB 651-0031
US Pleant & Trademark Office: US DEPARTMENT OF COMMERCE on of information unless it contains a yaild OMB control number.

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| | 01 | THER DOCUMENTS NON PATENT LITERATURE DOCUMENTS | |
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| | | RHINES, FREDERICK N., "Phase Diagrams in Metallurgy, Their Development and | |
| | | Application", Phase Diagrams in Metallurgy, Their Development and Application, | |
| | | McGraw-Hill book company, New York, (1956), Page 29 | |
| | | RHODERICK, E. H., "Metal-Semiconductor Contacts", Metal-Semiconductor | |
| | | Contacts, Second Edition, Clarendon Press, Oxford, (1988), 224-229 | |
| | | ROSSNAGEL, S. M., "Sputter deposition for semiconductor manufacturing", IBM | |
| | | Journal of Research and Development, Vol. 43, 1/2, | |
| | | http://www.research.ibm.com/journal/rd/431/rossnagel.html, (1999), 14 Pages | |
| | | SADOVSKII, M. V., "A model of a disordered system (A contribution to the theory of | |
| | | "liquid semiconductors")", Sov. Phys JETP, Vol. 39, No. 5, (November 1974), 845- | |
| | | 850 | |
| ٠ | | SCHMITZ, A. C., "Metal contacts to n-type GaN", Look Smart, | ŀ |
| | | http://www.findarticles.com/p/articles/mi_qa3776/is_199804/ai_n8797623, (April | |
| | | 1998), 3 Pages | |
| | | SZE, S. M., "Metal-Semiconductor Contacts", Physics of Semiconductor Devices, | |
| | | Second Edition, New York, John Wiley & Sons, Chapter 5, (1981), 245-311 and | |
| | | 820-825 | |
| | | TAI, H., et al., "Comparison of Stopping Power and Range Databases for Rediation | |
| | | Transport Study", National Aeronautics and Space Administration, Virginia, NASA | |
| | | Technical Paper 3644, (October 1997) | |
| | | VAN OVERSTRAETEN, R. J., et al., "Physics, Technology and Use of | |
| | | Photovoltaics", Physics, Technology and Use of Photovoltaics, Adam Hilger Ltd. | |
| | | Bristol, England, (1986) | |
| | | WANG, X. J., "Electrical characteristics of high performance Au/n-GaN Schottky | |
| | | diodes", Look Smart, | |
| | | http://www.findarticles.com/p/articles/mi_qa3776/is_199811/ai_n8824638, | |
| | | (November 1998), 5 Pages | <u> </u> |
| | | WOOLLAM, JOHN A., et al., "Photoconductive and Optical Properties of | |
| | | Amorphous Selenium", NASA Technical Note, D-6500, National Aeronautics and | |
| | | Space Adminstration, Washington D.C., (September 1971) | |
| | | ZINGARO, RALPH A., et al., "Selenium", Selenium, Van Nostrand Reinhold | |
| | | Company, New York, (1977) | |